

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A deflectable catheter assembly comprising:
 - a catheter shaft having a catheter proximal section and a catheter distal section, said catheter distal section being more flexible than said catheter proximal section and said catheter proximal section having a length greater than that of the catheter distal section;
 - a tendon disposed within a first lumen of said catheter shaft, said first lumen being approximately centrally located within said catheter shaft ~~at~~ along an entire length of said catheter proximal section and said first lumen located off-center of said catheter shaft at said catheter distal section, said tendon being able to deflect said catheter distal section when being pulled on without modifying a length of the catheter shaft; and
 - a catheter handle coupled to said catheter shaft, said catheter handle including a first control mechanism to control said tendon.
2. (Original) A deflectable catheter assembly as in claim 1 further comprises a needle disposed within a second lumen of said catheter shaft.
3. (Original) A deflectable catheter assembly as in claim 2 wherein said needle is approximately centrally located within said catheter shaft at said catheter distal section.
4. (Original) A deflectable catheter assembly as in claim 1 further comprises a plurality of needles each of which is disposed within a second lumen of said catheter shaft.
5. (Original) A deflectable catheter assembly as in claim 1 further comprises,
 - an axial spine disposed around and over a first section of said tendon, said first section being substantially aligned with said catheter proximal section, said axial spine to resist axial compression along said catheter proximal section.
6. (Original) A deflectable catheter assembly as in claim 1 further comprises,

an axial spine disposed around and over a first section of said tendon, said first section being substantially aligned with said catheter proximal section, said axial spine to resist axial compression along said catheter proximal section; and

a flexible tendon sheath coupling to said axial spine, said flexible tendon sheath extending a second section of said tendon and said second section being substantially aligned with said catheter distal section.

7. (Original) A deflectable catheter assembly as in claim 1 wherein said tendon comprises, an axial spine disposed over a first section of said tendon, said first section being substantially aligned with said catheter proximal section of said catheter shaft, said axial spine to resist axial compression along said catheter proximal section;

a first plurality of slip bands disposed around a distal section of said axial spine;

a second plurality of slip bands disposed around a proximal section of said axial spine;

and

a flexible tendon sheath coupling to said axial spine, said flexible tendon sheath extending a second section of said tendon and said second section being substantially aligned with said catheter distal section.

8. (Original) A deflectable catheter assembly as in claim 1 further comprising:

a tip electrode located at the tip of said catheter distal section and coupled to a conductive lead that extends out of said catheter shaft.

9. (Original) A deflectable catheter assembly as in claim 1 further comprising:

a tip electrode located at the tip of said catheter distal section and coupled to a conductive lead that extends out of said catheter shaft; and

at least one additional electrode located proximally along said catheter distal section and closely to said tip electrode, said at least one additional electrode coupled to another conductive lead that extends out of said catheter shaft, wherein said tip electrode and said at least one additional electrode forming a bipolar electrode system.

10. (Original) A deflectable catheter assembly as in claim 1 further comprising:
a tip electrode located at the tip of said catheter distal section and coupled to a conductive lead that extends out of said catheter shaft;
a medical device within a second lumen of said catheter shaft;
wherein said tip electrode having an opening to allow said medical device to pass therethrough, and
wherein said catheter handle includes a second control mechanism to control said medical device.
11. (Original) A deflectable catheter assembly as in claim 10 wherein said medical device is a needle.
12. (Original) A deflectable catheter assembly as in claim 10 further comprising:
at least one additional electrode located proximally along said catheter distal section and closely to said tip electrode, said at least one additional electrode coupled to another conductive lead that extends out of said catheter shaft, wherein said tip electrode and said at least one additional electrode forming a bipolar electrode system.
13. (Original) A deflectable catheter assembly as in claim 10 wherein said tip electrode is exposed only at a surface section of said catheter shaft proximate to where said medical device exits said catheter shaft to reach a target site.
14. (Original) A deflectable catheter assembly as in claim 13 further comprising:
at least one additional electrode located proximally along said catheter distal section and closely to said tip electrode, said at least one additional electrode coupled to another conductive lead that extends out of said catheter shaft, wherein said tip electrode and said at least one additional electrode forming a bipolar electrode system.
15. (Original) A deflectable catheter assembly as in claim 1 further comprising:

a tip electrode located at the tip of said catheter distal section and coupled to a conductive lead that extends out of said catheter shaft; and

at least one additional electrode located proximally along said catheter distal section, said at least one additional electrode buried beneath a surface of said catheter distal section and coupled to another conductive lead that extends out of said catheter shaft, wherein said catheter distal section includes an opening to expose said at least one additional electrode, and wherein said tip electrode and said at least one additional electrode forming a bipolar electrode system.

16. (Original) A deflectable catheter assembly as in claim 1 wherein said catheter proximal section is further divided into a middle catheter proximal section and a catheter proximal section wherein said middle catheter proximal section is more flexible than said catheter proximal section.

17. (Original) A deflectable catheter assembly as in claim 1 wherein catheter proximal section is further divided into a middle catheter proximal section and a catheter proximal section wherein said middle catheter proximal section is more flexible than said catheter proximal section and is less flexible than said catheter distal section.

18. (Original) A deflectable catheter assembly as in claim 2 wherein said first control mechanism includes a tendon control mechanism that deflects or relaxes a tendon included in said tendon to deflect said catheter distal section and wherein a second control mechanism is included in said catheter handle to control said needle.

19. (Original) A deflectable catheter assembly as in claim 1 further comprising:
a pre-shaped guide sheath disposed around said catheter shaft and extending from said catheter distal section to said catheter proximal section, said pre-shaped guide sheath being able to facilitate the maneuvering of said catheter shaft through tortuous pathways.

20. (Original) A deflectable catheter assembly as in claim 1 further comprising:

a pre-shaped guide sheath disposed around said catheter shaft and extending from said catheter distal section to said catheter proximal section, said pre-shaped guide sheath having at least one angular bend at a distal end to facilitate the maneuvering of said catheter shaft through tortuous pathways.

21. (Original) A deflectable catheter assembly as in claim 1 further comprising:

a pre-shaped guide sheath disposed around said catheter shaft and extending from said catheter distal section to said catheter proximal section, said pre-shaped guide sheath having a dual-angular bend at a distal end to facilitate the maneuvering of said catheter shaft through tortuous pathways.

22. (Original) A deflectable catheter assembly as in claim 1 further comprises a needle disposed within a needle tube, said needle tube disposed within a second lumen of said catheter shaft, said needle and said needle tube being extendable from and retractable into said catheter distal section and said needle being extendable from and retractable into said needle tube.

23. (Original) A deflectable catheter assembly as in claim 1 further comprises a plurality of needle assemblies, disposed within a second lumen of said catheter shaft, each of said plurality of needle assemblies being extendable from and retractable into said catheter distal section.

24. (Original) A deflectable catheter assembly as in claim 1 wherein further comprises a plurality of needles, each of said plurality of needles being disposed within a needle tube, each of said needle tubes disposed within a second lumen of said catheter shaft, each of said plurality of needles and said needle tubes being independently extendable from and retractable into said catheter distal section and each of said plurality of needles being independently extendable from and retractable into each of said needle tubes.

25. (Original) A deflectable catheter assembly as in claim 1 further comprises a plurality of needles and at least one inflatable balloon coupling to said plurality of needles, said inflatable balloon, when inflated, directs said plurality of needles to desired target sites.

26. (Original) A deflectable catheter assembly as in claim 1 further comprises at least one needle having a divergent angle disposed within a needle tube, said needle tube disposed within a second lumen of said catheter shaft, said at least one needle and said needle tube being extendable from and retractable into said catheter distal section and said at least one needle being extendable from and retractable into said needle tube.

27. (Original) A deflectable catheter assembly as in claim 1 further comprises at least one needle having a plurality of injection openings disposed within a needle tube, said needle tube disposed within a second lumen of said catheter shaft, said at least one needle and said needle tube being extendable from and retractable into said catheter distal section and said at least one needle being extendable from and retractable into said needle tube.

28. (Original) A deflectable catheter assembly as in claim 1 further comprises a needle disposed within a second lumen of said catheter shaft and a needle stop mechanism to control the travel distance of said needle.

29-114. (Cancelled)

115. (Original) A deflectable catheter assembly as in claim 2 further comprises a pressure sensor system coupling to said needle, said pressure sensor allows for fluid pressure measurements to indicate penetration depth for said needle.

116. (Original) A deflectable catheter assembly as in claim 115 wherein said needle includes a first end and a second end, said needle further having at least one aperture located a predetermined distance from the first end and said pressure sensor system coupled with a portion of said needle to measure pressure of a fluid dispensed in said needle, said pressure measurement assembly measuring a first pressure with said fluid dispensed in said needle, a second pressure when said needle contacts tissue before said aperture becomes occluded and a third pressure as said needle penetrates tissue and said aperture becomes occluded.

117. (Original) A deflectable catheter assembly as in claim 29 further comprises a pressure sensor system coupling to said needle, said pressure sensor allows for fluid pressure measurements to indicate penetration depth for said needle.

118. (Original) A deflectable catheter assembly as in claim 117 wherein said needle includes a first end and a second end, said needle further having at least one aperture located a predetermined distance from the first end and said pressure sensor system coupled with a portion of said needle to measure pressure of a fluid dispensed in said needle, said pressure measurement assembly measuring a first pressure with said fluid dispensed in said needle, a second pressure when said needle contact tissue before said aperture becomes occluded and a third pressure as said needle penetrates tissue and said aperture becomes occluded.

119. (Original) A deflectable catheter assembly as in claim 61 further comprises a pressure sensor system coupling to said needle, said pressure sensor allows for fluid pressure measurements to indicate penetration depth for said needle.

120. (Original) A deflectable catheter assembly as in claim 119 wherein said needle includes a first end and a second end, said needle further having at least one aperture located a predetermined distance from the first end and said pressure sensor system coupled with a portion of said needle to measure pressure of a fluid dispensed in said needle, said pressure measurement assembly measuring a first pressure with said fluid dispensed in said needle, a second pressure when said needle contacts tissue before said aperture becomes occluded and a third pressure as said needle penetrates tissue and said aperture becomes occluded.

121. (Original) A deflectable catheter assembly as in claim 64 further comprises a pressure sensor system coupling to said needle, said pressure sensor allows for fluid pressure measurements to indicate penetration depth for said needle.

122. (Original) A deflectable catheter assembly as in claim 121 wherein said needle includes a first end and a second end, said needle further having at least one aperture located a predetermined distance from the first end and said pressure sensor system coupled with a portion of said needle to measure pressure of a fluid dispensed in said needle, said pressure measurement assembly measuring a first pressure with said fluid dispensed in said needle, a second pressure when said needle contacts tissue before said aperture becomes occluded and a third pressure as said needle penetrates tissue and said aperture becomes occluded.

123-126. (Cancelled)

127. (Original) The method of claim 97 further comprises a pressure sensor system coupling to said needle, said pressure sensor allows for fluid pressure measurements to indicate penetration depth for said needle.

128. (Original) The method of claim 127 wherein said needle includes a first end and a second end, said needle further having at least one aperture located a predetermined distance from the first end and said pressure sensor system coupled with a portion of said needle to measure pressure of a fluid dispensed in said needle, said pressure measurement assembly measuring a first pressure with said fluid dispensed in said needle, a second pressure when said needle contacts tissue before said aperture becomes occluded and a third pressure as said needle penetrates tissue and said aperture becomes occluded.

129-131. (Cancelled)

132. (Original) The catheter assembly of claim 2 wherein the needle is made of a polymer material.

133. (Original) The catheter assembly of claim 29 wherein the needle is made of a polymer material.

134-137. (Cancelled)